

Appl. No. 10/644,200
Reply to Office Action of August 24, 2005

REMARKS

In the Office Action, claims 1, 5-7 and 9-11 are rejected under 35 U.S.C. §103. Claims 2-4 and 8 have been withdrawn due to a previous restriction requirement. Claims 1 and 7 are amended herein. Claim 9 has been cancelled without prejudice or disclaimer. Applicants believe that the rejections are improper or have been overcome for at least the reasons below.

In the Office Action, claim 1 was rejected under 35 U.S.C. §103(a) as being obvious in view of U.S. Patent No. 5,534,366 to Hwang et al. ("Hwang"), U.S. Patent No. 6,492,058 to Watanabe et al. ("Watanabe"), U.S. Patent No. 4,659,636 to Suzuki et al. ("Suzuki"), and U.S. Patent No. 5,436,969 to Kobayashi. The Patent Office relies primarily on Hwang and thus relies on the remaining cited art to remedy the deficiencies of Hwang.

As amended, claim 1 recites A battery pack including a battery block that houses one or more cylindrical lithium ion secondary batteries in a battery package, said batteries being arranged in the battery block according to a given polarity and connected to each other with a metal tab, wherein the tab is made by punching out a metal plate material into a strip shape and bending the strip in a given shape; a circuit block housing a circuit in a circuit package, the circuit having a measurement function associated with at least one of a use condition of the batteries, a measurement function associated with performance of the batteries, and a protection function to protect the batteries; and an outer case capable of fitting in and housing the battery block and the circuit block, wherein the battery block and the circuit block can be independently removed and replaced from the outer case, and wherein an inside dimension of the outer case substantially equals a total outside dimension of the battery block and the circuit block, wherein the battery block has a connection terminal on a side facing the circuit block, said connection terminal connected to the tab, and the circuit block has a connection on a side facing the battery block and a part of the connection terminal which is exposed out of the battery package and circuit package includes a blade spring in a tranche shape, wherein at least one of the battery package and the circuit package includes a hermetic package, and wherein the hermetic package has a hermetic structure that is formed by fitting together an open top lower package and an upper package having a groove corresponding to an opening of the lower package by press fitting.

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Applicants believe that amended claim 1 is distinguishable from the cited references, even if properly combinable. For example, nowhere does Hwang, Watanabe, Suzuki or Kobayashi disclose or suggest a battery block that houses one or more cylindrical lithium ion secondary batteries in a battery package, said batteries being arranged in the battery block according to a given polarity and connected to each other with a metal tab, as required by claim 1 and as further illustrated, for example, in Fig. 3. Indeed, Hwang provides a housing 16 with a first pocket 20 for receiving a battery cell cartridge 12. See, Hwang, Fig. 1. Watanabe provides that the battery pack can house, in its case, a thin outline battery as the rechargeable cell. See, Watanabe, col. 3, lines 31-32. Suzuki provides sealed storage battery comprising a plurality of flattened unitary cells. See, Suzuki, col. 1, lines 60-61. Kobayashi only generally provides for a battery unit including a battery. See, Kobayashi, col. 4, lines 31-32. Based on at least these differences, Applicants believe that the cited art fails to render obvious the claimed invention, even if properly combinable.

In the Office Action, claims 5 and 6 are rejected under 35 U.S.C. §103(a) as allegedly obvious in view of Hwang, Watanabe, Suzuki, Kobayashi as applied to claim 1 above, in further view of U.S. Patent No. 6,387,567 to Noh ("Noh"). Noh is primarily relied on for its alleged teaching regarding creating a hermetic seal in which the terminals are insert molded. See, Office Action, page 6. At the outset, Noh does not remedy the deficiencies discussed above with regard to amended claim 1. In addition, Applicants disagree with the assertion that Noh teaches battery terminals that are insert molded. Rather, Noh provides a secondary battery having a lower case 31 and an upper case 33 with one side periphery connected to the lower case 31 for enclosing a space 32 of the lower case 31. See, Noh, col. 4, lines 1-5. Moreover, Noh provides that the upper portion includes a sealing portion 33a and the lower portion includes a sealing portion 31a for creating a seal around the electrode terminals 25 and 27. See, Noh, Fig. 2. This can hardly be characterized as having connection terminals that are insert molded in the battery package or a circuit package, as required by claim 5. Moreover, the Patent Office cannot rely on hindsight reasoning in support of the obviousness rejection. Therefore, Applicants do not believe that one skilled in the art would be inclined to modify the cited art to arrive at the battery pack as claimed.

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Accordingly, Applicants respectfully submit that the obviousness rejections of claims 5 and 6 in view of Hwang, Watanabe, Suzuki, Kobayashi and Noh should be withdrawn based on at least these reasons.

In the Office Action, claim 7 was rejected under 35 U.S.C. §103(a) as allegedly obvious in view of U.S. Patent No. 5,929,600 to Hasegawa ("Hasegawa") and U.S. Patent No. 5,818,198 to Mito et al. ("Mito"). The Patent Office primarily relies on Hasegawa and thus further relies on Mito to remedy the deficiencies of Hasegawa.

Amended claim 7 recites A battery pack including an outer case for housing one or more cylindrical lithium ion secondary batteries and a circuit having at least one of a measurement function associated with a use condition of the batteries, a measurement function associated with performance of the batteries and a protection function to protect the batteries, wherein battery tabs at both ends are connected to a cathode and an anode of the battery and a central tab is connected to a midpoint lead, and wherein the midpoint lead is adapted to measure a potential between two batteries, and wherein inside of the outer case is completely separated into two chambers by a partition wall and the batteries and the circuit are separately housed in the two chambers, respectively, and wherein the outer case comprises an open top lower case with an inside that is sectioned into a plurality of chambers by a lower partition wall; and an upper case having an upper partition wall with a groove corresponding to the lower partition wall such that the two chambers have hermetic structures by formation of the partition wall by press fitting the lower partition wall into the groove of the upper partition wall and by forming a joint at an opening of the lower case, wherein the tabs are arranged on the lower partition wall by insert molding and the tabs are made by punching out a metal plate material into a strip shape and bending the strip in a given shape.

Applicants believe that amended claim 7 is distinguishable from the cited references, even if properly combinable. For example, nowhere does Hasegawa teach or suggest wherein inside of the outer case is completely separated into two chambers by a partition wall and the batteries and the circuit are separately housed in the two chambers, as even admitted by the Patent Office. See, Office Action, pgs. 5-6. Also, Hasegawa fails to teach or suggest the lower partition wall includes a plurality of insert molded tabs for electrically connecting said insert molded tabs with the battery tabs and the central tab, and for electrically connecting said insert

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molded tabs with the circuit. Applicants believe that the Mito reference does not remedy the deficiencies of Hasegawa.

Mito is primarily relied on by the Patent Office for allegedly disclosing where the outer case is completely separated into two chambers by a partition wall and the batteries and the circuit are housed in separate chambers, where the upper case has a partition wall with grooves. However, Mito does not teach or suggest the lower partition wall includes a plurality of insert molded tabs for electrically connecting said insert molded tabs with the battery tabs and the central tab. Rather, Mito provides notches 27a-27e and 29a-29e carved into the upper and lower partition walls, respectively. See, Mito, Figs. 4A and 4B. Through these notches are passed a negative side lead 52a, a terminal 52b, a positive side lead 52c, and leads 52d and 52e. See, Mito, col. 6, lines 56-63. Clearly these leads are not insert molded into the lower partition wall, as required by amended claim 7. Indeed, Mito notes that in order to provide something approaching a hermetic seal, that silicone rubber must be applied to the groove 28 before completing the battery cell assembly. See, Mito, col. 5, lines 8-10. Moreover, sealing the package in this manner does not indicate that the Mito assembly is modular in any respect, in contrast to the present invention.

Accordingly, Applicants respectfully request that the obviousness rejection of claim 7 in view of Hasegawa and Mito be withdrawn.

In the Office Action, claims 9-11 were rejected under 35 U.S.C. §103(a) as being unpatentable in view of Hasegawa, Mito, and Hwang. Therefore, the Patent Office relies primarily on Hasegawa, and thus, further relies on Mito and Hwang to remedy the deficiencies of Hasegawa. The rejection of claim 9 has been rendered moot in view of the cancellation of same. With regard to claims 10-11, the Patent Office primarily relies on Hwang for the purported disclosure that an outer case contains branched tabs. Therefore, for at least the reasons discussed above, Hwang does not remedy the deficiencies of Hasegawa and Mito.

Accordingly, Applicants respectfully submit that Hasegawa, Mito and Hwang fail to render obvious Claims 10-11, and thus, Applicants respectfully request that this rejection be withdrawn in view of same.

For the foregoing reasons, Applicants respectfully submit that the present application is in condition for allowance and earnestly solicit reconsideration of same.

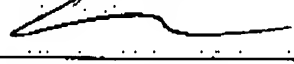
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Respectfully submitted,

BELL, BOYD & LLOYD LLC

BY


Thomas C. Basso

Reg. No. 46,541

Customer No. 29175

Dated: November 22, 2005